U. S. Fish and Wildlife Service

Examination of Fishery Habitat at Michigan Islands NWR

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Thunder Bay Island

Thunder Bay and Scarecrow Islands in Lake Huron's Thunder Bay are part of the Michigan Islands National Wildlife Refuge (NWR) complex and provide important habitat for migratory waterfowl and colonial nesting birds. The Great Lakes Basin Ecosystem Team has recognized the value of Great Lakes Islands and identified islands as a resource priority. In addition to the terrestrial habitat values provided by the islands, most contain coastal wetlands and are adjacent to shoal habitats that are important to native Great Lakes fish species. Effective management of the islands within the Michigan Islands NWR requires that adequate information is available on all fish and wildlife resources of importance to the Service.

Scarecrow Island

This project allowed the Service to expand its assessment activities on the Thunder Bay and Scarecrow Islands to include fishery surveys of the coastal wetlands and shoal areas on the periphery of the islands. The location of spawning and nursery habitat and timing of its use will be important for effective management. Identification of sensitive areas and times can be used to coordinate and regulate human access to the islands.

Methods

The Alpena Fishery Resources Office worked with local volunteers to establish fishery surveys for fishery management plan development on Michigan Islands NWR. Surveys were conducted in 2001 to assess species composition and establish baseline information for relative abundance in nearshore fishery habitat of the Michigan Islands NWR. Two islands, Thunder Bay Island and Scarecrow Island, in Thunder Bay of Lake Huron were sampled from May to July 2001 using trap nets, minnow traps and gill nets. Two sizes of trap nets were used, 4'x 6' and 2.5' x 2.5', three minnow traps were used per island, and two experimental gill nets were used at Thunder Bay Island and one experimental gill net was used at Scarecrow Island. Islands were sampled with two overnight sets per month to establish timing of fish use of nearshore habitat.

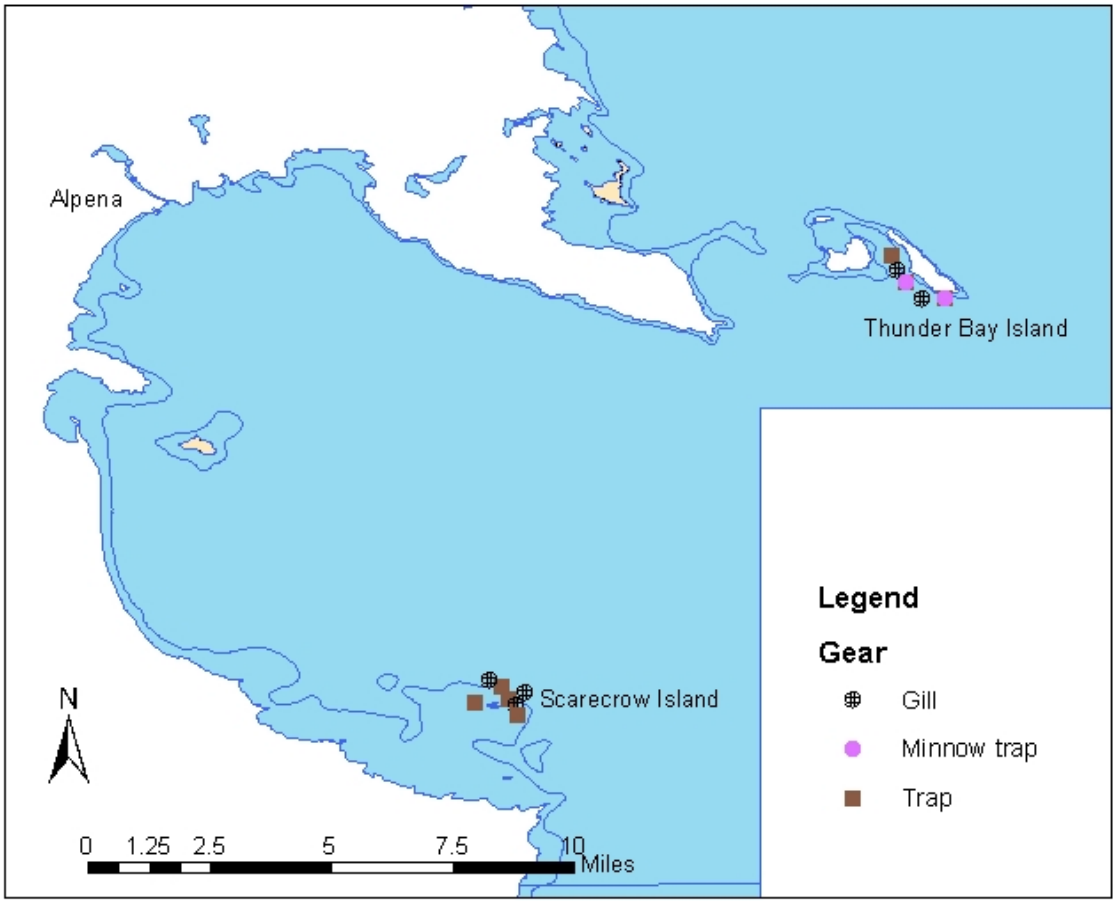

Figure 1. Sample sites at Michigan Islands NWR, 2001.

Results

Sixteen species were documented using nearshore habitat of Thunder Bay and Scarecrow Islands. Diversity and abundance were both higher at Thunder Bay Island than Scarecrow Island. Substrate differed between the two islands. Thunder Bay Island has a large variety of habitats available to fish including bedrock, cobble, sand, and vegetated substrates at a wider variety of depths (0-30 feet). Scarecrow Island has more shallow (0-3 feet) habitat dominated by cobble substrate with smaller areas of sand substrate. In addition, Scarecrow Island has a colony of cormorants, while Thunder Bay Island does not.

One walleye, two smallmouth bass, four lake trout, and one chinook salmon were captured near Thunder Bay Island (Figure 1). One burbot was captured near Scarecrow Island. Prey fish including alewife, sculpins, round goby, shiners, and minnows were numerous and diverse near Thunder Bay Island, but not near Scarecrow Island. Although fish abundances were higher at Thunder Bay Island, none of the survey methods produced enough fish to assess timing of habitat use or to use as a reliable index for

comparison of relative abundance in the future (Table 1). Methods not attempted which may fit these criteria include electrofishing and seining.

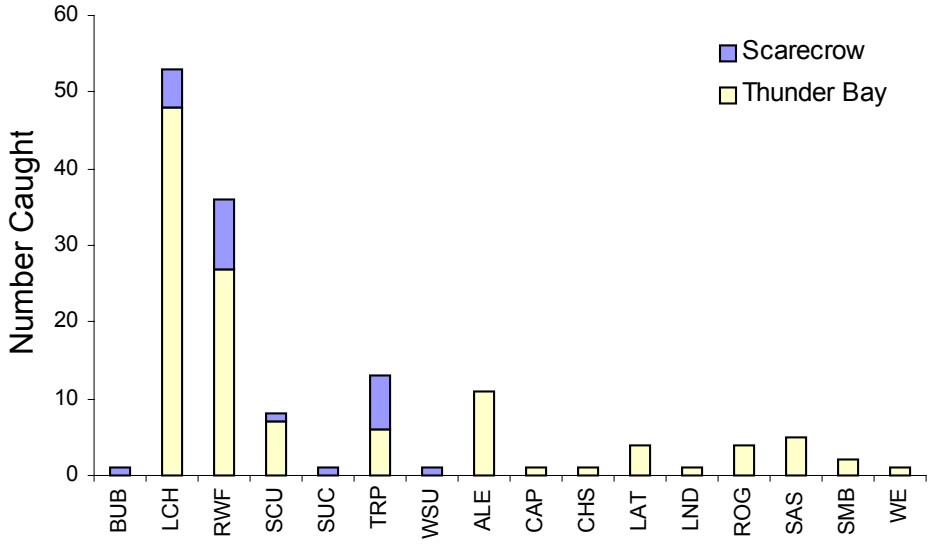

Figure 2. Species composition and number caught for Thunder Bay and Scarecrow Islands.

Table 1. Fishery information for Michigan Islands NWR surveys, 2001.

Species	Average Length (mm)	Range (mm)	Number Caught	Month Caught	Island
Alewife (ALE)	163	113-177	11	July	Thunder Bay
Burbot (BUB)	590		1	May	Scarecrow
Carp (CAP)	690		1	July	Thunder Bay
Chinook Salmon (CHS)	882			July	Thunder Bay
Lake Trout (LAT)	606	547-667	4	May	Thunder Bay
Lake Chub (LCH)	125	86-192	53	May, June	Thunder Bay
Longnose Dace (LND)	58		1	July	Thunder Bay
Round Goby (ROG)	103	75-130	4	May, June	Thunder Bay
Round Whitefish (RWF)	412	202-479	36	May, June, July	Both
Sandshiner (SAS)	61	57-66	5	July	Thunder Bay
Sculpin (SCU)	77	58-95	2	May, June, July	Both
Smallmouth Bass (SMB)	159	153-165	2	June	Thunder Bay
Troutperch (TRP)	97	80-113	13	May, June	Both
Walleye (WE)	603		1	July	Thunder Bay
White Sucker (WSU)	550	518-581	2	May, June	Scarecrow

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